



*An Energy-Efficiency Workshop and Exposition
Orlando, Florida*

Biomass & Alternative Methane Fuels Super ESPC

presented to
Energy 2003

Orlando, FL August 20, 2003

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BAMF Tech Specific Super ESPC

Basic Features

- ❖ Federal Facility - Worldwide
- ❖ One of selected ESCO's
- ❖ Involve a BAMF Resource
- ❖ Contract & technical support by NETL

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2



BAMF Contractors

ESCO's Awarded IDIQ Contracts

- Constellation Energy Source
- DTE Biomass Energy, Inc.
- Energy Systems Group
- Exelon Services Federal Group
- Trigen Development Corporation

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3



Biomass Resources

Woodwaste & Waste wood

- Forest Clearing
- Lumber Companies
- Furniture Industry
- Dedicated Crops



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4



Biomass Resources

Municipal & Agricultural Wastes

- Landfills (MSW and LFG)
- Wastewater Treatment Plants
- Dairy, Hog & Poultry



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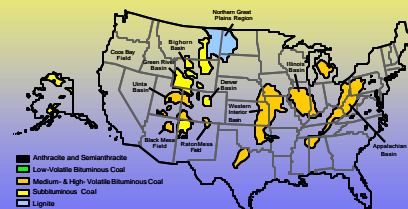
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5



Biomass Resources

Coal Mine and Coal-bed Methane



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6



Biomass Resources

Biofuel Production

- Ethanol
- Methanols
- Bio-diesel
- Corn
- Soybeans
- Recycled Oils



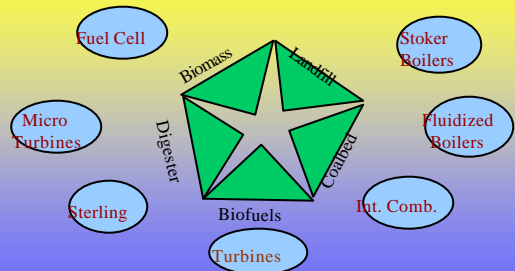
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End Use Applications



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Biomass System Reliability

- 1000 Plants in Operation
- Energy Stored & Dispatched
- High Capacity Factors



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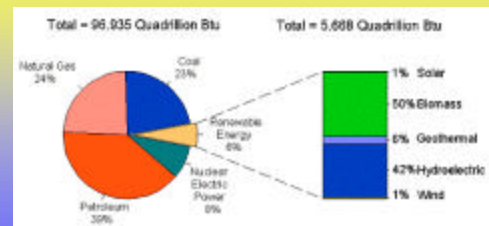
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9



National Energy Production

Energy Information Agency 2001 Report



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Bioenergy Industries

Direct Combustion & Co-firing

- 7,800 MW Installed
- 600+ locations
- Mostly CHP
- 800+ federal candidates



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11



Bioenergy Industries

Landfill Gas Industry - Rules of Thumb

- 350 commercial projects
- 1000 MW in production
- 1 million tons = 300 cfm = .8 MWe
- 700 federal candidates



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12



Bioenergy Industries

Coal Mine / Coalbed Methane Gas

- ❖ Coalbed – 17 projects selling 43 bcf/yr
- ❖ Coal Mines captured 14 bcf in 1990 36 bcf in 2000
- ❖ Uses – heat, power, and sale to gas grid



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13



Bioenergy Industries

Wastewater Treatment Digester Gas

- Thousands in operation
- 10 mile radius
- 3 million gal. per day
- 500 facilities capable of > 250kw



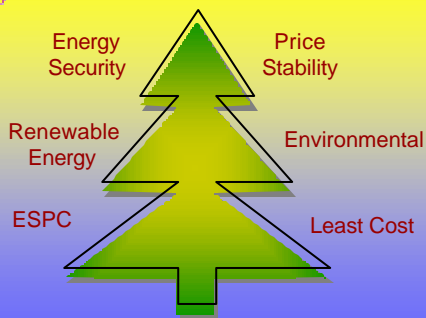
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BAMF Project Benefits



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BAMF Resource Assessments

Software programs that match information on federal facilities with specific BAMF resources:

- Landfills (within 10 miles)
- Wastewater treatment plants (within 10 miles)
- Wood waste from 10 or more sources (within 50 miles)

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16



Resource Assessment - Wastewood



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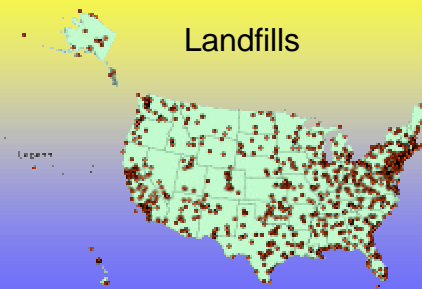
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17



Resource Assessment

Landfills



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Resource Assessment Waste Water Treatment Plants



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19



Conclusion

- Many types of resources & technologies
- Projects will meet multiple agency goals
- FEMP & BAMF Teams ready to assist



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20